

1     CLAIMS

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3     1.     Dispensing apparatus comprising an inlet port  
4     for coupling to an opening of a container containing  
5     flowable material and an outlet port through which  
6     the material is dispensed; the inlet and outlet  
7     ports being separated by a conduit; a first one-way  
8     valve positioned at the inlet port to permit passage  
9     of the flowable material from the container into the  
10    conduit, and a second one-way valve positioned at  
11    the outlet port to permit passage of the flowable  
12    material from the conduit; and means for selectively  
13    varying the volume of the conduit between the inlet  
14    and outlet ports to pump the flowable material.

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16    2.     Dispensing apparatus according to claim 1,  
17    wherein the conduit is resiliently deformable.

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19    3.     Dispensing apparatus according to claim 1 or 2,  
20    wherein the respective inlet and outlet ends of the  
21    conduit are displaceable relative to each other to  
22    selectively vary the volume of the conduit between  
23    the inlet and outlet ports.

24

25    4.     Dispensing apparatus according to any preceding  
26    claim, wherein the inlet port is adapted to form a  
27    hermetically sealed connection with the opening of  
28    the container.

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30    5.     Dispensing apparatus according to any preceding  
31    claim, wherein a collar for receiving the opening of  
32    the container and forming a hermetic seal is mounted  
33    on, and surrounds, the inlet port.

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2 6. Dispensing apparatus according to claim 5,  
3 wherein the collar is resiliently deformable.

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5 7. Dispensing apparatus according to claim 5 or 6,  
6 wherein the collar is annular in shape and has a  
7 substantially planar upper end surface, a  
8 substantially planar lower end surface and  
9 substantially cylindrical internal and external  
10 surfaces.

11

12 8. Dispensing apparatus according to claim 7,  
13 wherein at least part of the internal surface of the  
14 resilient collar tapers inwardly from the upper end  
15 surface around its entire circumference to form a  
16 frusto-conical profile.

17

18 9. Dispensing apparatus according to claim 7 or 8,  
19 wherein at least one upstanding annular sealing ring  
20 extends from the upper end surface.

21

22 10. Dispensing apparatus according to claim 9,  
23 wherein the or each upstanding annular sealing ring  
24 is formed integrally with the resilient collar.

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26 11. Dispensing apparatus according to any of claims  
27 6 to 8, wherein the resilient collar is made from a  
28 silicone material.

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30 12. Dispensing apparatus according to any of claims  
31 5 to 11, wherein a substantially rigid housing  
32 surrounds the collar and the inlet port.

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1     13. Dispensing apparatus according to claim 12,  
2     wherein a radial flange portion projects inwardly  
3     from the lower peripheral edge of the housing.

4  
5     14. Dispensing apparatus according claim 13,  
6     wherein the inlet end of the conduit proximate the  
7     inlet port is supported on the radial flange.

8  
9     15. Dispensing apparatus according to claim 14,  
10    wherein the inlet port is interposed between the  
11    conduit and the collar.

12  
13    16. Dispensing apparatus according to any of claims  
14    12 to 15, wherein projections are provided on the  
15    exterior of the housing, said projections being  
16    releasably connectable to a wall-mountable casing  
17    such that the dispensing apparatus and the container  
18    are locatable within said casing.

19  
20    17. Dispensing apparatus according to claim 16,  
21    wherein a cradle member is pivotably and  
22    releasably mounted on the casing.

23  
24    18. Dispensing apparatus according to claim 17,  
25    wherein cam surfaces are provided on the cradle  
26    member.

27  
28    19. Dispensing apparatus according to claim 18,  
29    wherein cam surface engaging portions are provided  
30    on the outlet port.

31  
32    20. Dispensing apparatus according to claim 19,  
33    wherein the cam surface engaging portions are

1     diametrically opposed projecting pins.

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3     21.   Dispensing apparatus according to any of claims  
4     17 to 20, wherein the cradle member has two  
5     sidewalls and a supporting surface adapted to  
6     receive a toothbrush head.

7

8     22.   Dispensing apparatus according to claim 21,  
9     wherein the supporting surface is provided with a  
10    push surface for selective engagement with the  
11    distal end of the toothbrush head.

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13    23.   Dispensing apparatus according to any preceding  
14    claim, wherein the flowable material is semi-solid.

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16    24.   Dispensing apparatus according to claim 23,  
17    wherein the flowable semi-solid material is  
18    dentifrice material.

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20    25.   Dispensing apparatus according to any preceding  
21    claim, wherein the conduit is a bellows pump.

22

23    26.   Dispensing apparatus according to any preceding  
24    claim, wherein the inlet port is perforated.

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26    27.   Dispensing apparatus according to any preceding  
27    claim, wherein the first one-way valve is an  
28    umbrella valve.

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30    28.   Dispensing apparatus according to any preceding  
31    claim, wherein the second one-way valve is a  
32    duckbill valve.

33

1     29. A method of dispensing flowable material from a  
2     container using the dispensing apparatus according  
3     to any of claims 1 to 28, comprising the steps of:

4         (i) coupling the opening of a container with an  
5         inlet port of the dispensing apparatus;

6         (ii) priming the dispensing apparatus to remove  
7         any air within the apparatus or the container  
8         by sequentially reducing and increasing the  
9         volume between the inlet port and an outlet  
10        port in a pumping action; and

11        (iii) reducing the volume between the inlet and  
12        outlet ports to pump the dentifrice material  
13        from the container and through a first one-way  
14        valve, a conduit and a second one-way valve  
15        respectively.

16

17     30. A method of dispensing flowable material from a  
18     container according to claim 29, wherein the step of  
19     reducing the volume between the inlet and outlet  
20     ports is achieved by applying a force to compress  
21     the conduit longitudinally.

22

23     31. A method of dispensing flowable material from a  
24     container according to claim 30, wherein the step of  
25     applying a longitudinal force is achieved by  
26     pivoting a cradle member having cam surfaces about a  
27     pivot axis, said cam surfaces moving cam surface  
28     engaging portions provided on the outlet port, thus  
29     moving the outlet port towards the inlet port.

30

31     32. A method of dispensing dentifrice material from  
32     a container according to claim 31, wherein the step  
33     of pivoting the cradle member is achieved by

- 1 positioning a toothbrush head on the cradle member
- 2 and applying a force in a direction corresponding to
- 3 the longitudinal axis of the toothbrush.